

Memorandum

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Flex your power!
Be energy efficient!

To: MR. ALBERT ZEPEDA
Senior Transportation Engineer
Design Alameda I

Date: April 25, 2005

Attention: Amjad Naseer

File: 04-ALA-13,24,580,880
KP Var
04-250-0A8001
Gore Area Sign Replacement

From: TUNG NGUYEN *an*
Transportation Engineer
Office of Geotechnical Design – West
Geotechnical Services
Division of Engineering Services

STEVEN KAKIHARA *SK*
Chief, Branch D
Office of Geotechnical Design – West
Geotechnical Services
Division of Engineering Services

Subject: Geotechnical Recommendations for Overhead Signs

This memo is in reply to your request to provide geotechnical recommendations for planned Overhead Signs with the worse-case foundation loads for the subject project. The project consists of replacing Overhead Signs on Routes 13, 24, 580, and 880 in Alameda County at Various Kilometer Posts.

Geotechnical Recommendations

Based on our evaluation of nearby borings and site reconnaissance visits, we have the following recommendations:

The Standard Overhead Signs – Tubular Single or Two Post Types with the maximum post height of 8.84 m and maximum panel depth of 3.048 m shall be adequate for the project at the following locations: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, ~~11~~, 12, 13, 14, 15, 16, 17, 19, 20, 21, and 22. These signs shall be supported by the Cast in Drilled Hole (CIDH) piles with the diameter of 1.524 m and the length of 10.058 m. Based on our evaluation, the foundation soils meet or exceed the required internal friction of 30 degree and unit weight of 1922 kg/m³ (120 pcf).

Variable subsurface conditions are anticipated including high groundwater levels, caving soils, and hard materials during the CIDH pile construction. CIDH piles should be constructed in accordance with the Standard Specifications.

MR. ALBERT ZEPEDA

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Sign Locations Requiring Additional Information

Proposed Overhead Sign #18

We understand that it has not been determined if this sign will be attached to the bridge structure or if it will extend to the street below (the corner space at Foothill and Marlow). If the sign will be attached to the bridge, no further geotechnical input would be required. If the sign will extend to the street below, the height of the sign will exceed the maximum height of the standard sign and would therefore become a special design requiring the input from Structures Design. On a preliminary basis, we evaluated the foundation for a longer sign and concluded that the standard foundation would probably be adequate. Nevertheless, Structures Design should evaluate the non-standard condition and we can confirm the adequacy of the foundation.

Overhead Sign #23

No subsurface data was available for this sign and its location is in an area potentially underlain by soft soils. Subsurface conditions at this location should be evaluated by performing a subsurface exploration program. We will update you regarding our schedule for the subsurface exploration.

Overhead Sign #11

We understand that the location of this sign has not been determined. It may either be located immediately behind a retaining wall structure or be attached to the retaining wall itself. As built plans indicate that the retaining wall is pile supported. If the sign will be located immediately behind the retaining wall structure, it appears that the sign will require a special design, partly because the required length of the CIDH foundation for the sign will encounter the retaining wall foundation. We can assist you and Structures Design as needed, when the location of the sign has been determined.

If you have any questions or need additional information, please call me at 510-622-1775 or Steven Kakihara at 510-286-4752.

c: TPokrywka, SKakihara, TNguyen, Daily File, Route File

TNguyen/mm

Memorandum

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To: MR. ALBERT ZEPEDA
Senior Transportation Engineer
Office of Design - Alameda I

Date: July 19, 2005

Attention: Amjad Naseer

File: 04-ALA-13,24,580,880
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04-250-0A8001
Gore Area Sign Replacement

From: TUNG NGUYEN *NT*
Transportation Engineer
Office of Geotechnical Design - West
Geotechnical Services
Division of Engineering Services

STEVEN KAKIHARA *SK*
Chief, Branch D
Office of Geotechnical Design - West
Geotechnical Services
Division of Engineering Services

Subject : Geotechnical Recommendations for Overhead Signs #23

This memo provides geotechnical recommendations for planned Overhead Sign #23 with the worse-case foundation load for the subject project. Overhead Sign #23 is proposed to be installed on the Southbound of Route 880 in Alameda County at Kilometer Post 46.92 (PM 29.16). We previously provided our recommendations for other proposed signs of the subject project.

Two Cone Penetration Tests, CPT-1 and CPT-2, were conducted on July 18, 2005 to depths of 3.25 m (10.7 ft) and 3.15 m (10.3 ft), respectively. These tests were not advanced further due to high resistance of the materials below the cone tip.

Subsurface Condition

The subsurface condition to the maximum depth of exploration consists of medium dense silty sand and sandy silt, firm to very stiff clayey silt, silty clay, and clay.

Geotechnical Recommendations

Based on our evaluation of subsurface condition from CPT, nearby Log of Test Borings, Geologic Map of the Oakland Metropolitan Area (Graymer, 2000), and Geologic and Engineering Aspects of San Francisco Bayfill (Goldman, 1966), we have the following recommendations:

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Attn: Amjad Naseer

July 19, 2005

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The Standard Overhead Sign-Truss Type shall be adequate for this proposed location. The sign shall be supported by the Cast in Drilled Hole (CIDH) pile with the diameter up to 1.524 m and the length up to 7.6 m. Based on our evaluation, the foundation soils meet or exceed the required internal friction of 30 degrees and unit weight of 1922 kg/m^3 (120 pcf).

Variable subsurface conditions are anticipated including high groundwater level, caving soils, and hard materials during the CIDH pile construction. CIDH piles should be constructed in accordance with the Standard Specifications.

If you have any questions or need additional information, please call me at 510-622-1775 or Steven Kakihara at 510-286-4752.

c: TPokrywka, SKakihara, TNguyen, Daily File, Route File

TNguyen/mm

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To: MR. ALBERT ZEPEDA
Senior Transportation Engineer
Office of Alameda I

Date: August 29, 2005

Attention: Amjad Naseer

File: 04-ALA-13,24,580,880
KP Var
04-250-0A8001
Gore Area Sign Replacement

From: TUNG NGUYEN
Transportation Engineer
Office of Geotechnical Design – West
Geotechnical Services
Division of Engineering Services

STEVEN KAKIHARA
Chief, Branch D
Office of Geotechnical Design – West
Geotechnical Services
Division of Engineering Services

Subject : Groundwater Level

This memo is in reply to your request to provide information about groundwater levels at the locations of the proposed Overhead Signs for the subject project. We previously provided geotechnical recommendations for these Overhead Signs in memos dated April 25 and July 19, 2005.

The groundwater elevations near the proposed Overhead Signs are tabulated in the following Table.

Sign No	Route # and Direction	PM	PM of Nearby Boring(s)	Groundwater Elevation, m (ft)
1	13 NB	4.97	4.85	86.6 (284)
2	13 SB	8.60	8.27	GW. Not Encountered
3	13 SB	4.56	4.32	GW. Not Encountered
4	24 EB	5.65	5.47	159.0 (521)
5	580 EB	39.63	39.91	56.7 (186)
6	580 EB	39.10	39.24	GW. Not Encountered
7	580 EB	38.37	38.31	87.5 (287)
8	580 EB	36.43	36.34	43.9 (144)
9	580 EB	35.90	35.71	19.8 (65)
10	580 EB	35.20	35.10	GW. Not Encountered
11	580 EB	34.38	34.40	GW. Not Encountered

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12	580 EB	32.99	32.84	10.7 (35)
13	580 EB	31.98	31.71	29.3 (96)
14	580 WB	20.79	20.71	98.2 (322)
15	580 WB	31.79	31.71	32.3 (106)
16	580 WB	33.40	33.94	GW. Not Encountered
17	580 WB	34.23	34.40	GW. Not Encountered
18	580 WB	34.86	34.81	21.6 (71)
19	580 WB	36.21	36.34	44.2 (145)
20	580 WB	37.58	37.80	94.5 (310)
21	880 NB	28.62	28.69	GW. Not Encountered
22	880 NB	28.91	28.93	-1.5 (-5)
23	880 NB	29.16	28.98	-1.5 (-5)

Note that groundwater levels were obtained from nearby borings. Groundwater level should be expected to seasonally fluctuate. The contractor should expect variable groundwater conditions during construction.

If you have any questions or need additional information, please call me at 510-622-1775 or Steven Kakihara at 510-286-4752.

c: TPokrywka, SKakihara, TNguyen, Daily File, Route File

TNguyen/mm

Memo to File

Date: 8/11/05

Time: 2:15 am

File: 04250-0A8001

04-Ala-13, 24, 580, 880 – KP(PM): Varies
Gore Area Sign Replacement

Subject: Soil Investigation for Site 11 & 18



Based on a conversation with Tung Nguyen of D4 Geotechnical, no additional soil investigation for the new locations of sign 11 & 18 is necessary as the signs are to be located on shoulders where soils are good.

Attachment(s): Geotechnical memo dated 4/25/05
Sign plans S-11 & S-18

c: Albert Zepeda
Project file/A. Naseer – (w/ copies of attachments)

AN/an